Construct Precision

How precise is your definition of what you want to measure?

Even though you think you've identified what it is you want to measure, investigate it further.

Consider the following:

Dimensionality

Is the construct you want to measure *unidimensional*, or is it actually a set of related concepts?

How do you know this?

Assessing Construct Precision

Illustration:

PAIN

How do you define pain?
Is it unidimensional or multidimensional?
Does its definition vary across contexts?
How do you know?

Example from Literature

Supervía A, Pedro-Botet J, et al.
pharmacology study (BMJ (1998) 81, 27-30)

- Research question:

  "What is the therapeutic effect of sublingual piroxicam, compared with a reference drug, on acute renal colic?"

- Measured outcome (baseline and +30 mins.):
  "pain intensity"

Example from Literature (continued)

"Pain intensity" measured:

- Patient-reported pain (visual analog scale)

  "a 10-cm divided line: point 0 as 'no pain' and point 10 as 'the most excruciating pain' "

- Observer-reported patient pain (4-point scale)

  "0 as no pain, 1 as discomfort rather than true pain, 2 as intense pain but without psychomotor agitation, 3 as unbearable pain with psychomotor agitation"

The Issue of Definition

- How is pain defined?

Literature:

Pain is a multi-dimensional set of constructs:

- *Sensory*
- *Emotional*
- *Behavioral*
- *Cognitive*

(Novy, Nelson, Francis & Turk, 1995)

The Issue of Definition

- How is pain defined in this study?

Patient:

Sensory (i.e., pain levels on continuum), and
Emotional ("the most *excruciating*")

Physician:

Observed Eensory,
Observed Emotional, and
Observed Behavioral (grimacing)

Moral of the Story

- Constructs can be complex
- Solution: Gather evidence
  - Research literature review
  - Measurement literature review
  - Review by experts in the field

Evidence of Construct Precision

- Clear construct definition(s)
- The usefulness of (success in) measuring the construct(s)
- Unidimensionality of the construct(s)

Item Precision

Construct precision extends to how the constructs are represented in the instrument:

- What about the quality of the items?
- Are they written "right"? (i.e., technically accurate, readable, eliciting the anticipated responses)
- How do you know?

Evidence of Item Precision

- Your own review
- Literature review
- Review by experts in the field
- Small-sample try-out in your context

Last Point

A word about revising an instrument on your own:

Caution!

- Sought-after measurement qualities may not be visible in the wording of the items
- Inter-item reliability, responsiveness to change, and specificity of classification may be negatively affected